

## ***Deck Element Index***

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The following SmartFlags may be used in conjunction with Deck elements:

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371\*-3- Traffic Impact (Deck)

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Units: Each

This element defines those concrete bridge decks with no surface protection of any type and are constructed with uncoated reinforcement. Report the condition state that most nearly represents the condition of the entire deck.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface.

- Feasible actions:
- 1) DN
  - 2) Add a protective system

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled/delam areas
  - 3) Add a protective system

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% or less** of the total deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled areas
  - 3) Repair spalled areas and add a protective system on entire deck

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled areas
  - 3) Repair spalled areas and add protective system on entire deck

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled areas and/or add protective system on entire deck
  - 3) Replace deck

Units: Each

This element defines those bridge decks with no surface protection of any type and are constructed with uncoated reinforcement. The deck is covered with an asphaltic concrete overlay. Report the condition that most nearly represents the condition of the entire deck.

Condition State 1 The surfacing on the deck has no repaired areas and there are no potholes in this surfacing.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **less than 2%** of the deck area.

Feasible actions: 1) DN  
2) Repair potholes and substrate

Condition State 3 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repaired potholes & substrate  
3) Replace overlay & repair substrate

Condition State 4 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay & repair substrate  
3) Repair substrate & replace overlay

Condition State 5 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair substrate & replace overlay  
3) Replace deck

Units: Each

This element defines those bridge decks **protected with a membrane, has uncoated reinforcement and the membrane is protected with an asphaltic concrete overlay.** ~~This deck has had no substrate repairs.~~ Report the condition statement that most nearly represents the entire deck.

Condition State 1 The surfacing on the deck has no repaired areas and there are no potholes in this surfacing.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **less than 2%** of the deck area.

Feasible actions: 1) DN  
2) Repair potholes

Condition State 3 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repair potholes  
3) Replace overlay

Condition State 4 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Patch potholes  
3) Replace overlay and protective system

Condition State 5 **Repaired areas and/or potholes exist.** Their combined area is **more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay & protective system  
3) Replace deck

Units: Each

This element defines those bridge decks that are protected with a thin (< 1 in.) overlay (e.g. portland cement, epoxy, resin, etc.). ~~The deck has had no substrate repairs.~~ Report the condition state that most nearly represents the entire deck.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface. No wear-out is visible.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams  
3) Replace overlay

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay  
3) Replace deck

Units: Each

This element defines those bridge decks that are protected with a rigid overlay (> 1 in.)(e.g. portland cement, epoxy, resin, etc.). ~~The deck has had no substrate repairs.~~ Report the condition state that most nearly represents the entire deck.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface. No wear-out is visible.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams  
3) Replace overlay

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay  
3) Replace deck

Units: Each

This element defines those concrete bridge decks with no surface protection of any type and are constructed with coated (epoxy, galvanizing, stainless steel, etc.) reinforcement. Report the condition state that most nearly represents the condition of the entire deck.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface.

- Feasible actions:
- 1) DN
  - 2) Add a protective system

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled/delam areas
  - 3) Add a protective system

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% or less** of the total deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled areas
  - 3) Repair spalled areas and add a protective system on entire deck

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled areas
  - 3) Repair spalled areas and add protective system on entire deck

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled areas and/or add protective system on entire deck
  - 3) Replace deck



Units: Each

This element defines those concrete bridge decks with a thin (< 1 in.) overlay (e.g. portland cement, epoxy, resin, etc.) and are constructed with coated (epoxy, galvanizing, stainless steel, etc.) reinforcement. Report the condition state that most nearly represents the condition of the entire deck.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface. No wear-out is visible.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams  
3) Replace overlay

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay  
3) Replace deck

Units: Each

This element defines those concrete bridge decks with a rigid (> 1 in.) overlay (e.g. portland cement, epoxy, resin, etc.) and are constructed with coated (epoxy, galvanizing, stainless steel, etc.) reinforcement. Report the condition state that most nearly represents the condition of the entire deck.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface. No wear-out is visible.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams  
3) Replace overlay

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay  
3) Replace deck

Units: Each

This element defines those concrete bridge decks constructed with an asphaltic concrete overlay (waterproof membrane is assumed) and are constructed with coated (epoxy, galvanizing, stainless steel, etc.) reinforcement. Report the condition state that most nearly represents the condition of the entire deck.

Condition State 1 The surfacing on the deck has no repaired areas and there are no potholes in this surfacing.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **less than 2%** of the deck area.

Feasible actions: 1) DN  
2) Repair potholes

Condition State 3 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repair potholes  
3) Replace overlay

Condition State 4 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is more than **10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Patch potholes  
3) Replace overlay and protective system

Condition State 5 **Repaired areas and/or potholes exist.** Their combined area is **more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay & protective system  
3) Replace deck

Units: Each

This element defines those concrete slab bridges protected with a cathodic system. The deck may or may not be covered with an overlay. Report the condition state that most nearly represents the entire deck.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

Feasible actions: 1) DN  
2) Patch spalls/delams

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas  
3) Repair spalled areas and add or replace overlay

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas  
3) Repair spalled areas and add or replace overlay

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas and add or replace overlay  
3) Replace deck

Units: Each

This element defines those bridge decks that are constructed of steel grids that are open and unfilled. Report the condition state that most nearly represents the condition of the entire deck and its connection devices.

CDOT SUGGESTED CONDITION STATES FOR CORROSION ON PAINTED STEEL ELEMENTS		
	Description	CS
Light R1	Slight peeling of the paint, pitting, or surface rust, etc. No measurable section loss	2
R1	Peeling of the paint, pitting, surface rust, etc. No measurable section loss	3
R2	Flaking, minor section loss ( $\leq 10\%$ thickness loss)	4
R3	Flaking, swelling, mod. section loss ( $10\% < \text{thickness loss} \leq 30\%$ ) <b>structural analysis is not warranted.</b>	4
R3	Flaking, swelling, mod. section loss ( $10\% < \text{thickness loss} \leq 30\%$ ) <b>structural analysis is warranted due to location of corrosion on the member.</b>	5
R4	Heavy section loss ( $> 30\%$ thickness loss), may have holes through base metal	5

Condition State 1 There is no corrosion. The paint system, if any, is sound. The connectors (welds, rivets, etc.) are sound.

Feasible actions: 1) DN

Condition State 2 **There is little or no corrosion.** The paint system, if any, may be showing early signs of distress. The connectors are still sound.

Feasible actions: 1) DN  
2) Surface clean

Condition State 3 **Surface or freckled rust has formed.** The paint system is no longer fully effective. There is no loss of section. The connectors may be starting to show signs of distress - cracked welds or broken rivets.

Feasible actions: 1) DN  
2) Surface clean and restore top coat  
3) Rehab connectors

Condition State 4 **Corrosion is moderate. Surface pitting may be present** but any section loss is incidental. Numerous connectors are failing at scattered locations. The strength or serviceability of the section is not yet affected.

Feasible actions: 1) DN  
2) Spot blast, clean & paint  
3) Rehab connectors

Condition State 5 **Corrosion is advanced.** Numerous connectors have failed. **Section loss and/or connectivity is sufficient to warrant analysis** to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge.

Feasible actions: 1) DN  
2) Rehab connectors & replace paint system  
3) Replace unit

**Units:Each**

This element defines those bridge decks that are constructed of steel grids with either all of the openings or just those in the wheel lines filled with concrete. Report the condition state that most nearly represents the condition of the entire deck and its connection devices.

CDOT SUGGESTED CONDITION STATES FOR CORROSION ON PAINTED STEEL ELEMENTS		
	Description	CS
Light R1	Slight peeling of the paint, pitting, or surface rust, etc. No measurable section loss	2
R1	Peeling of the paint, pitting, surface rust, etc. No measurable section loss	3
R2	Flaking, minor section loss ( $\leq 10\%$ thickness loss)	4
R3	Flaking, swelling, mod. section loss ( $10\% < \text{thickness loss} \leq 30\%$ ) <b>structural analysis is not warranted.</b>	4
R3	Flaking, swelling, mod. section loss ( $10\% < \text{thickness loss} \leq 30\%$ ) <b>structural analysis is warranted due to location of corrosion on the member.</b>	5
R4	Heavy section loss ( $> 30\%$ thickness loss), may have holes through base metal	5

Condition State 1 There is no corrosion. The paint system, if any, is sound. The connectors (welds, rivets, etc.) are sound. The concrete filler is sound.

Feasible actions: 1) DN

Condition State 2 **There is little or no corrosion.** The paint system, if any, may be showing early signs of distress. The connectors are still sound. The concrete filler is sound.

Feasible actions: 1) DN  
2) Surface clean

Condition State 3 **Surface or freckled rust has formed.** The paint system is no longer fully effective. There is no loss of section. The connectors may be starting to show signs of distress - cracked welds or broken rivets. The concrete filler may have broken out at scattered locations.

Feasible actions: 1) DN  
2) Surface clean and restore top coat  
3) Rehab connectors and concrete filler

Condition State 4 **Surface or freckled rust has formed.** The paint system is no longer fully effective. There is no loss of section. Numerous connectors are failing at scattered locations. Small areas of concrete are missing.

Feasible actions: 1) DN  
2) Spot blast, clean & paint  
3) Rehab connectors and concrete filler

Condition State 5 **Corrosion is advanced.** Numerous connectors have failed. **Section loss and/or connectivity is sufficient to warrant analysis** to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge. Much of the concrete filler is missing.

Feasible actions: 1) DN  
2) Rehab connectors & concrete filler & replace paint system  
3) Replace unit

**Units:Each**

This element defines those bridge decks that are constructed of corrugated metal filled with portland cement concrete or asphaltic concrete or an orthotropic steel deck. The orthotropic deck may be covered with an asphaltic or resin concrete. Report the condition state that most nearly represents the entire deck.

	CDOT SUGGESTED CONDITION STATES FOR CORROSION ON PAINTED STEEL ELEMENTS	
	Description	CS
Light R1	Slight peeling of the paint, pitting, or surface rust, etc. No measurable section loss	2
R1	Peeling of the paint, pitting, surface rust, etc. No measurable section loss	3
R2	Flaking, minor section loss ( $\leq 10\%$ thickness loss)	4
R3	Flaking, swelling, mod. section loss ( $10\% < \text{thickness loss} \leq 30\%$ ) <b>structural analysis is not warranted.</b>	4
R3	Flaking, swelling, mod. section loss ( $10\% < \text{thickness loss} \leq 30\%$ ) <b>structural analysis is warranted due to location of corrosion on the member.</b>	5
R4	Heavy section loss ( $> 30\%$ thickness loss), may have holes through base metal	5

Condition State 1 There is no evidence of corrosion and any paint systems are sound and functioning as intended to protect the metal surface. The surfacing, if any, on the deck has no repaired areas and there are no potholes.

Feasible actions: 1) DN

Condition State 2 **There is little or no corrosion.** Any paint systems may be showing early signs of distress. Minor cracking or potholes may exist in the surfacing.

Feasible actions: 1) DN  
2) Surface clean & restore top coat of paint  
3) Repair potholes and cracks

Condition State 3 **Surface or freckle rust has formed.** There is no loss of section. Potholes exist in the surfacing and there may be significant cracking.

Feasible actions: 1) DN  
2) Surface clean & restore top coat of paint  
3) Repair potholes and cracks

Condition State 4 **The paint system has failed. Surface pitting may be present** but any section loss is incidental. Potholes may be large and expose the metal decking.

Feasible actions: 1) DN  
2) Spot blast, clean & paint - repair potholes  
3) Replace paint system and/or replace surfacing

Condition State 5 **Corrosion is advanced. Section loss is sufficient to warrant analysis** to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge. The surfacing has failed.

Feasible actions: 1) DN  
2) Rehab., replace paint system, replace surfacing  
3) Replace unit

Units: Each

This element defines those bridge decks constructed of timber. The decks may be longitudinally or transversely laminated or of planks. The decks may or may not be constructed with runners of metal or wood. Report the condition state that more nearly represents the entire deck.

CDOT SUGGESTED CONDITION STATES FOR TIMBER DECKS AND SLABS				
CONDITION STATES	CS1	CS2	CS3	CS4
Potholes in asphalt	NONE	< 10% of area	10% to 25% of area	> 25% of area
Deterioration of bare deck	NONE	< 10% of area	10% to 25% of area	> 25% of area

Condition State 1 Investigation indicates **no decay**. There **may be cracks, splits and checks** having no effect on strength or serviceability.

Feasible actions: 1) DN

Condition State 2 **Decay, insect infestation, splitting, cracking or crushing may exist** but none is sufficiently advanced to affect serviceability or strength.

Feasible actions: 1) DN  
2) Rehab and/or protect deck

Condition State 3 **Decay, insect infestation, splitting cracking or crushing has produced loss of strength** of the element but **not of sufficient magnitude to affect the serviceability** of the bridge.

Feasible actions: 1) DN  
2) Rehab deck  
3) Replace deck

Condition State 4 **Advanced deterioration. Decay, insect infestation, splits, cracks or crushing has produced loss of strength that affects the serviceability** of the bridge.

Feasible actions: 1) DN  
2) Replace deck



Units: Each

This element defines those bridge decks constructed of timber. The decks may be longitudinally or transversely laminated or of planks. These decks are over-layed with asphaltic concrete. Report the condition state that most nearly represents the entire deck.

CDOT SUGGESTED CONDITION STATES FOR TIMBER DECKS AND SLABS				
CONDITION STATES	CS1	CS2	CS3	CS4
Potholes in asphalt	NONE	< 10% of area	10% to 25% of area	> 25% of area
Deterioration of bare deck	NONE	< 10% of area	10% to 25% of area	> 25% of area

Condition State 1 Investigation indicates **no decay**. There **may be cracks, splits and checks having no effect** on strength or serviceability. There are no potholes in the surfacing.

Feasible actions: 1) DN

Condition State 2 **Decay, insect infestation, splitting, cracking or crushing may exist** but none is sufficiently advanced to affect serviceability. There may be minor potholes or impending potholes in the surfacing.

Feasible actions: 1) DN  
2) Repair potholes  
3) Rehab and /or protect unit

Condition State 3 **Decay, insect infestation, splitting cracking or crushing has produced loss of strength** of the element but **not of sufficient magnitude to affect the serviceability** of the bridge.

Feasible actions: 1) DN  
2) Rehab deck & repair or replace surfacing  
3) Replace deck and surfacing

Condition State 4 **Advanced deterioration. Decay, insect infestation, splits, cracks or crushing has produced loss of strength that affects the serviceability** of the bridge.

Feasible actions: 1) DN  
2) Replace deck and surfacing

Units: Each

This element includes decks with precast, prestressed or precast conventional reinforced panels 3" thick or more with a cast-in-place slab on them. Report the condition state that most nearly represents the entire deck.

This element includes decks with precast prestressed or precast conventional reinforced panels 3" or more thick with a cast-in-place slab above them. The joints between the precast panels are not considered construction joints due to the partial depth of the joint.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

Feasible actions: 1) DN  
2) Patch spalls/delams

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas  
3) Repair spalled areas and add or replace overlay

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas  
3) Repair spalled areas and add or replace overlay

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas and add or replace overlay  
3) Replace deck

Units: Each

This element includes decks with precast, prestressed or precast conventional reinforced panels 3" thick or more with a cast-in-place slab on them. The deck is covered with an asphaltic concrete overlay. Report the condition state that most nearly represents the entire deck.

This element includes decks with precast prestressed or precast conventional reinforced panels 3" or more thick with a cast-in-place slab above them. The joints between the precast panels are not considered construction joints due to the partial depth of the joint.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

Feasible actions: 1) DN  
2) Patch spalls/delams

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas  
3) Repair spalled areas and add or replace overlay

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas  
3) Repair spalled areas and add or replace overlay

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas and add or replace overlay  
3) Replace deck

Units: Each

This element defines those concrete slab bridges with no surface protection of any type and are constructed with uncoated reinforcement. Report the condition state that most nearly represents the entire deck.

**CDOT Notes: Element 38 Concrete Slab - Bare or Element 52 Concrete Slab - Protected w/Coated Bars may be used in a situation with fill. Use your judgement whether there is fill and code accordingly.**

**GCD25 - Report the height of fill on bridges and culverts and write it on the inventory sheet so NBI Item66T can be appropriately coded.**

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface.

- Feasible actions:
- 1) DN
  - 2) Add a protective system

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled/delam areas
  - 3) Add a protective system

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% or less** of the total deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled areas
  - 3) Repair spalled areas and add a protective system on entire deck

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled areas
  - 3) Repair spalled areas and add protective system on entire deck

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

- Feasible actions:
- 1) DN
  - 2) Repair spalled areas and/or add protective system on entire deck
  - 3) Replace deck

Units: Each

This element defines only those concrete slab bridges with no surface protection of any type and are constructed with uncoated reinforcement. The deck is covered with an asphaltic concrete overlay. Report the condition state that most nearly represents the entire deck.

**CDOT Note: Do not use this element in a situation with fill. Use Element 38 Concrete Slab - Bare or Element 52 Concrete Slab - Protected w/Coated Bars.**

Condition State 1 The surfacing on the deck has no repaired areas and there are no potholes in this surfacing.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **less than 2%** of the deck area.

Feasible actions: 1) DN  
2) Repair potholes and substrate

Condition State 3 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repaired potholes & substrate  
3) Replace overlay & repair substrate

Condition State 4 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is more than **10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay & repair substrate  
3) Repair substrate & replace overlay

Condition State 5 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair substrate & replace overlay  
3) Replace deck

Units: Each

This element defines those concrete slab bridges with the deck **protected by a membrane, has uncoated reinforcement and the membrane is protected with an asphaltic concrete overlay.** Report the condition statement that most nearly represents the entire deck.

**CDOT Note: Do not use this element in a situation with fill. Use Element 38 Concrete Slab - Bare or Element 52 Concrete Slab - Protected w/Coated Bars.**

Condition State 1 The surfacing on the deck has no repaired areas and there are no potholes in this surfacing.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **less than 2%** of the deck area.

Feasible actions: 1) DN  
2) Repair potholes

Condition State 3 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is **10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repair potholes  
3) Replace overlay

Condition State 4 **Repaired areas and/or potholes or impending potholes exist.** Their combined area is more than **10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Patch potholes  
3) Replace overlay and protective system

Condition State 5 **Repaired areas and/or potholes exist.** Their combined area is **more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay & protective system  
3) Replace deck

Units: Each

This element defines those concrete slab bridges where the deck surface is protected with a thin (< 1 in.) overlay (e.g. portland cement, epoxy, resin, etc.) Report the condition statement that most nearly represents the condition of the entire deck.

**CDOT Note: Do not use this element in a situation with fill. Use Element 38 Concrete Slab - Bare or Element 52 Concrete Slab - Protected w/Coated Bars.**

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface. No wear-out is visible.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams  
3) Replace overlay

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay  
3) Replace deck

Units: Each

This element defines those concrete slab bridges where the deck surface is protected with a rigid overlay (> 1 in.)(e.g. portland cement, epoxy, resin, etc.) Report the condition state that most nearly represents the condition of the entire deck.

**CDOT Note: Do not use this element in a situation with fill. Use Element 38 Concrete Slab - Bare or Element 52 Concrete Slab - Protected w/Coated Bars.**

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface. No wear-out is visible.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalls/delams  
3) Replace overlay

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Replace overlay  
3) Replace deck



Units: Each

This element defines those concrete slab bridges with the superstructure constructed with coated reinforcement. The deck may be covered with some type of overlay. Report the condition state that most nearly represents the entire deck.

CDOT Notes: Element 38 Concrete Slab - Bare or Element 52 Concrete Slab - Protected w/Coated Bars may be used in a situation with fill. Use your judgement whether there is fill and code accordingly.

Use this element in situations with or without asphalt.

GCD25 - Report the height of fill on bridges and culverts and write it on the inventory sheet so NBI Item66T can be appropriately coded.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface.

Feasible actions: 1) DN

Condition State 2 Repaired areas and/or spalls/delaminations exist in the deck surface. The combined distressed area is 2% or less of the deck area.

Feasible actions: 1) DN  
2) Patch spalls/delams

Condition State 3 Repaired areas and/or spalls/delaminations exist in the deck surface. The combined area of distress is 10% or less of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas  
3) Repair spalled areas and add or replace overlay

Condition State 4 Repaired areas and/or spalls/delaminations exist in the deck surface. The combined area of distress is more than 10% but less than 25% of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas  
3) Repair spalled areas and add or replace overlay

Condition State 5 Repaired areas and/or spalls/delaminations exist. The combined area of distress is more than 25% of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas and add or replace overlay  
3) Replace deck

Units: Each

This element defines those concrete slab bridges protected with a cathodic system. The deck may or may not be covered with an overlay. Report the condition state that most nearly represents the entire deck.

Condition State 1 The surface of the deck has no repaired areas and there are no spalls/delaminations in the deck surface.

Feasible actions: 1) DN

Condition State 2 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined **distressed area is 2% or less** of the deck area.

Feasible actions: 1) DN  
2) Patch spalls/delams

Condition State 3 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is 10% or less** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas  
3) Repair spalled areas and add or replace overlay

Condition State 4 **Repaired areas and/or spalls/delaminations exist** in the deck surface. The combined area of **distress is more than 10% but less than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas  
3) Repair spalled areas and add or replace overlay

Condition State 5 **Repaired areas and/or spalls/delaminations exist.** The combined area of **distress is more than 25%** of the total deck area.

Feasible actions: 1) DN  
2) Repair spalled areas and add or replace overlay  
3) Replace deck

Units: Each

This element defines those timber bridge slabs with no surface protection of any type. Report the condition state that most nearly represents the condition of the entire deck.

CDOT SUGGESTED CONDITION STATES FOR TIMBER DECKS AND SLABS				
CONDITION STATES	CS1	CS2	CS3	CS4
Potholes in asphalt	NONE	< 10% of area	10% to 25% of area	> 25% of area
Deterioration of bare deck	NONE	< 10% of area	10% to 25% of area	> 25% of area

**CDOT Note: Do not use SmartFlag 359 Soffit of Concrete Decks or Slabs in conjunction with this element.**

Condition State 1 Investigation indicates **no decay**. There **may be cracks, splits and checks having no effect** on strength or serviceability.

Feasible actions: 1) DN

Condition State 2 **Decay, insect infestation, splitting, cracking or crushing may exist but none is sufficiently advanced to affect** serviceability or strength.

Feasible actions: 1) DN  
2) Rehab and/or protect deck

Condition State 3 **Decay, insect infestation, splitting cracking or crushing has produced loss of strength** of the element but **not of sufficient magnitude to affect** the serviceability of the bridge.

Feasible actions: 1) DN  
2) Rehab deck  
3) Replace deck

Condition State 4 **Advanced deterioration. Decay, insect infestation, splits, cracks or crushing** has produced loss of strength that **affects the serviceability of the bridge**.

Feasible actions: 1) DN  
2) Replace deck

Units: Each

This element defines those bridge slabs constructed of timber. These slabs are over-layered with asphaltic concrete. Report the condition state slabs that most nearly represents the entire deck.

CDOT SUGGESTED CONDITION STATES FOR TIMBER DECKS AND SLABS				
CONDITION STATES	CS1	CS2	CS3	CS4
Potholes in asphalt	NONE	< 10% of area	10% to 25% of area	> 25% of area
<del>Deterioration of bare deck</del>	NONE	<del>&lt; 10% of area</del>	<del>10% to 25% of area</del>	<del>&gt; 25% of area</del>

**CDOT Note: Do not use SmartFlag 359 Soffit of Concrete Decks or Slabs in conjunction with this element.**

Condition State 1 Investigation indicates no decay. There may be cracks, splits and checks having no effect on strength or serviceability. **There are no potholes in the surfacing.**

Feasible actions: 1) DN

Condition State 2 **Decay, insect infestation, splitting, cracking or crushing may exist but none is sufficiently advanced to affect** serviceability. There may be minor potholes or impending potholes in the surfacing.

Feasible actions: 1) DN  
2) Repair potholes  
3) Rehab and /or protect unit

Condition State 3 **Decay, insect infestation, splitting cracking or crushing has produced loss of strength** of the element but **not of sufficient magnitude to affect** the serviceability of the bridge.

Feasible actions: 1) DN  
2) Rehab deck & repair or replace surfacing  
3) Replace deck and surfacing

Condition State 4 **Advanced deterioration. Decay, insect infestation, splits, cracks or crushing has produced loss of strength** that affects the serviceability of the bridge.

Feasible actions: 1) DN  
2) Replace deck and surfacing

Units: Each

This element defines those bridges decks that carry a railroad over a highway, county road, or city street. They can be constructed of steel, concrete, timber or a combination of materials. They may or may not have a membrane, covered with rock or cinder ballast, or railroad ties and no ballast.

Due to the type of service used in this element, the **condition states will be based on the bottom condition of the deck** as the top surface is very seldom visible for inspection. The **feasible actions will consist of rehabilitation or replacement.**

**CDOT Notes:** Describe what type of material is utilized for the deck in the comments for this element.

**Do not use SmartFlag 359 Soffit of Concrete Decks or Slabs in conjunction with this element.**

Condition State 1 The element shows no evidence of distress or deterioration. There may be **very minor water leakage at the joints**. Timber may have **minor checks**.

Condition State 2 The is **light transverse cracks** in the concrete and **may or may not have water leakage**; the steel decks have **R1 other than at the joints**, the paint system is still intact and there is **no bare metal**; timber has **minor water stain, minor checks**, but no other signs of deterioration.

Condition State 3 The concrete shows **cracking with efflorescence and water leakage**; steel decks have **R1 other than at the joints**, the paint system has **failed**; timber has **moderate water stain, checking, minor splits**, but no other signs of deterioration.

Condition State 4 The concrete has **heavy efflorescence, may have stalactites but no delaminations** on the bottom; steel decks have **R2 other than at the joints**; timber has **checking, minor splits, minor rot**. All signs of **distress** are **not sufficient magnitude to affect serviceability** of the bridge.

Condition State 5 The concrete has **heavy efflorescence, may have stalactites, delaminations** on the bottom; steel decks have **R3/R4 other than at the joints**; timber has **checking, splitting, rot, or cracking**. All signs of **distress** are of **sufficient magnitude to affect serviceability** of the bridge.

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